TRANSFORMATIONS OF QUADRATIC FUNCTIONS – Day 2

Graph the following functions on your calculator, and describe the change.

1) $y_1 = x^2$ $y_2 = (x + 3)^2$ How does the graph of $y = x^2$ change?	**2)** $y_1 = x^2$ $y_2 = (x – 3)^2$ How does the graph of $y = x^2$ change?

In the general equation $y = a(x – c)^2 + d$…

When $c > 0$, the graph shifts _____ c units.
→ Looks like this: $(x - c)$

When $c < 0$, the graph shifts _____ c units.
→ Looks like this: $(x + c)$

Changing c causes a **horizontal translation**.

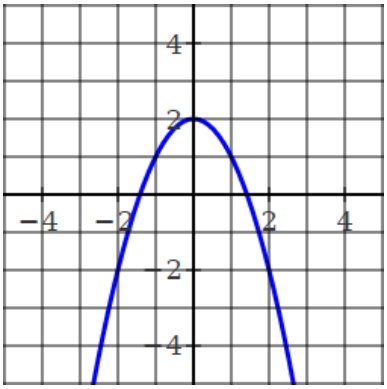
3) Fill in the table below.

Equation	Description of the change in $y = x^2$
$y = x^2 + 4$	
	Right 3 units
	Reflected across the x-axis, Up 1 unit
$y = -x^2 – 2$	
	Stretched by a factor 4, Left 6 units
$y = 2(x – 5)^2 + 7$	
	Compressed by a factor $\frac{1}{3}$
$y = -(x + n)^2 – m$	

4) Eqn: _____

D: _____

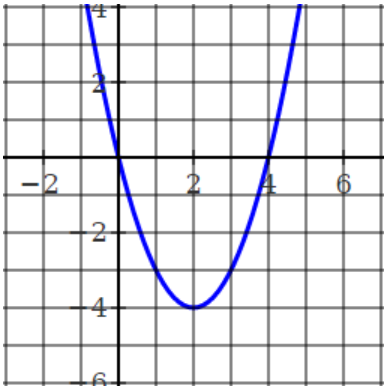
R: _____



5) Eqn: _____

Vertex: _____

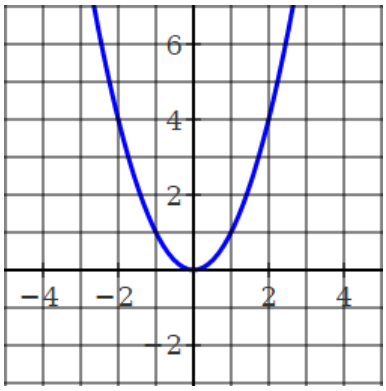
AOS: _____



6) Eqn: _____

Vertex: _____

AOS: _____



7) How does the graph of $y = 3x^2 - 5$ compare with the graph of $y = 3x^2 + 8$?

A. The graph of $y = 3x^2 - 5$ is 3 units above the graph of $y = 3x^2 + 8$.

B. The graph of $y = 3x^2 - 5$ is 13 units below the graph of $y = 3x^2 + 8$.

C. The graph of $y = 3x^2 - 5$ is 3 units to the right of the graph of $y = 3x^2 + 8$.

D. The graph of $y = 3x^2 - 5$ is 13 units to the left of the graph of $y = 3x^2 + 8$.

8) If the graph of $y = \frac{3}{4}x^2 - 1$ is translated up 4 units, which of the following equations represents the resulting graph?

A. $y = 3x^2 - 4$

B. $y = \frac{3}{4}x^2 + 3$

C. $y = 3x^2 + 4$

D. $y = \frac{3}{4}x^2 - 5$

9) What steps transform the graph of $y = x^2$ to $y = -3(x + 4)^2 + 2$?

A. Reflect across the x-axis, stretch by a factor of 3, translate 4 units to the right and 2 units up.

B. Stretch by a factor 3, translate 4 units to the right and 2 units up.

C. Reflect across the x-axis, translate 4 units to the left and 2 units up.

D. Stretch by a factor 3, reflect across the x-axis, translate 4 units to the left and 2 units up.